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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/265,659	03/10/1999	JAMES M. NOHRDEN	CRYS:038	4788

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03/25/2004

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EXAMINER

FAULK, DEVONA E

ART UNIT	PAPER NUMBER
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2644

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DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/265,659

Applicant(s)

NOHRDEN ET AL.

Examiner

Devona E. Faulk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17, 19, 25, 26, 31, 32, 35-37 and 42 is/are rejected.
- 7) ☒ Claim(s) 11-16, 18, 20-24, 27-30, 33, 34, 38-41, 43 and 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1,4,9,10,25,26,36 and 37** are rejected under 35 U.S.C. 102(e) as being anticipated by Eory (U.S Patent 5,832,043).

Regarding **claim 1**, Eory discloses a RF receiver comprising an antenna (10) (Figure 1) , which reads on "antenna"; a RF signal processing block (20) that includes RF filters and mixers to pre-condition and down-convert the received signal (column 3, lines 57-63), which reads on a "frequency converter coupled to receive signals from the antenna"; an A/D converter (40), a complex multiplier (55), a phase/frequency discriminator (90) which read on "digital receiver"; the A/D converter (40) reads on "analog to digital converter circuitry"; the complex multiplier (55) that receives the near-zero IF in-phase channel data (45) and the near-zero IF quadrature channel data (50) as one complex multiplicand and outputs the base-band I channel and Q channel (column 4, lines 32-41) reads on "demodulator circuitry coupled to receive digital signals from the analog to digital converter circuitry and having demodulated digital signals as outputs"; the phase/frequency discriminator (90) has a phase/frequency error signal (91) as an output. The phase/frequency error signal represents the instantaneous value of the frequency

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error and phase error (column 5, lines 7-23). This reads on a “distortion discrimination circuitry coupled to the demodulated digital signals and having at least one distortion indication signals as an output, the distortion indication signal indicating when a distortion event has been detected”.

Claim 4 claims the radio receiver of claim 1, wherein the distortion discrimination circuitry comprises impulse noise distortion discrimination circuitry and the distortion indication signal comprises an impulse noise distortion indication signal. Eory’s phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory’s discriminator outputs an error signal.

3. Regarding **claim 9**, Eory discloses a RF receiver comprising an A/D converter (40) reads on “analog to digital converter circuitry”; a complex multiplier (55) that receives the near-zero IF in-phase channel data (45) and the near-zero IF quadrature channel data (50) as one complex multiplicand and outputs the base-band I channel and Q channel (column 4, lines 32-41) reads on “demodulator circuitry coupled to receive digital signals from the analog to digital converter circuitry and having demodulated digital signals as outputs”; and a phase/frequency discriminator (90) has a phase/frequency error signal (91) as an output. The phase/frequency error signal represents the instantaneous value of the frequency error and phase error (column 5, lines 7-23). This reads on a “distortion discrimination circuitry coupled to the demodulated digital signals and having at least one distortion indication signals as an output, the distortion indication signal indicating when a distortion event has been detected”.

Claim 10 claims the radio receiver of claim 9, wherein the distortion discrimination circuitry comprises impulse noise distortion discrimination circuitry and the distortion indication

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signal comprises an impulse noise distortion indication signal. Eory's phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory's discriminator outputs an error signal.

4. Regarding **claim 25**, Eory discloses a RF receiver comprising an A/D converter (40) reads on "converting analog audio information to digital audio signal information"; a complex multiplier (55) that receives the near-zero IF in-phase channel data (45) and the near-zero IF quadrature channel data (50) as one complex multiplicand and outputs the base-band I channel and Q channel (column 4, lines 32-41) reads on "demodulating the digital audio signal information"; and a phase/frequency discriminator (90) has a phase/frequency error signal (91) as an output. The phase/frequency error signal represents the instantaneous value of the frequency error and phase error (column 5, lines 7-23). This reads on a "discrimination distortions within the demodulated digital signals by monitoring the demodulated digital signals" and "generating at least one distortion indication signal" as claimed. The method is inherent in the functionality of the device.

Claim 26 claims the method for discrimination of claim 25, wherein the discrimination distortion step comprises discriminating impulse noise distortion events and wherein the generating step comprises generating an impulse noise distortion indication signal. Eory's phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory's discriminator outputs an error signal. The method is inherent in the functionality of the device.

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5. Regarding **claim 36**, Eory discloses a RF receiver comprising a phase/frequency discriminator (90) has inputs coupled to base-band in-phase channel data (80) and baseband quadrature channel data (85) and a phase/frequency error signal (91) as an output. The phase/frequency error signal represents the instantaneous value of the frequency error and phase error (column 5, lines 7-23). This reads on a “demodulated digital audio input signals” and “at least one distortion indication signal as an output, the distortion indication output signal indicating when a distortion event has been detected in the demodulated digital audio input signals”. The method is inherent in the functionality of the device.

Claim 37 claims the distortion discrimination circuitry of claim 36, wherein the distortion discrimination distortion circuitry comprises impulse noise distortion discrimination circuitry and the distortion indication signal comprises an impulse noise distortion indication signal. Eory’s phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background , page 2 ,line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory’s discriminator outputs an error signal. The method is inherent in the functionality of the device.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eory (U.S. Patent 5,832,043) in view of Kennedy et al (U.S. Patent 5,408,685).

Claim 2 claims the radio receiver of claim 1, wherein the digital receiver further comprises a stereo decoder to receive the demodulated digital signal from the demodulator and having decoded audio signals as outputs. Kennedy discloses a receiver comprising a decoder (22) that is coupled a demodulator (21) and outputs decoded signals (Figure 1). It would have been obvious to one of ordinary skill in the art at the time of filing to modify Eory's receiver by incorporating Kennedy's decoder for the benefit of generating thoroughly decoded signals.

Claim 3 claims the radio receiver of claim 2, wherein the stereo decoder receives the distortion indication signal and is responsive to the distortion indication signal to modify the audio output signals to diminish effects in the decoded audio output signals. Kennedy further discloses that the stereo decoder (22) is also connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory's receiver to incorporate a stereo decoder as claimed for the benefit of having a thoroughly demodulated signal at the output.

8. **Claims 5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eory (U.S. Patent 5,832,043) in view of Kennedy et al. (U.S. Patent 5,408,685).

Claim 5 claims the radio receiver of claim 4, further comprising a stereo decoder coupled to receive the impulse noise distortion indication signal, wherein the stereo decoder is responsive to the impulse noise distortion indication signal to modify the audio output signals to diminish

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impulse noise distortion effects in the decoded audio output signals. Eory's phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory's discriminator outputs an error signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory receiver by coupling a decoder to the discriminator as claimed for the benefit of avoiding undesirable sounds at the speaker output.

Claim 6 claims the radio receiver of claim 1, wherein the distortion discrimination circuitry comprises multi-path distortion discrimination circuitry and the distortion indication signals comprises a multi-path distortion indication signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory's receiver by incorporating Kennedy's multi-path detector as claimed for the benefit of avoiding undesirable sounds at the speaker output.

Claim 7 claims the radio receiver of claim 4, further comprising a stereo decoder coupled to receive the multi-path distortion indication signal, wherein the stereo decoder is responsive to the multi-path distortion indication signal to modify the audio output signals to diminish multi-

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path distortion effects in the decoded audio output signals. Kennedy further teaches of a stereo decoder (22) connected to the multi-path detector/minimizer (30) and that the detector (30) controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Kennedy's decoder for the benefit of having an even clearer sound at the speaker output.

9. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Eory (U.S. Patent 5,832,043) in view of Kennedy et al. (U.S. Patent 5,408,685) in view of Matsumoto (U.S. Patent 6,118,990).

Claim 8 claims the radio receiver of system 6, further comprising another antenna and wherein the multi-path distortion discrimination signal is utilized to switch between the antennas. Matsumoto discloses receivers with antenna switching diversity are well known in the art and that the switching operates upon detection from a multi-path distortion (noise) or the like (column 1, lines 15-23). Thus it would have been obvious to use antenna-switching diversity for the benefit of the receiver having the capability of receiving signals in various frequency bands.

10. **Claims 17,19 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eory (U.S. Patent 5,832,043) in view of Kennedy et al. (U.S. Patent 5,408,685).

Claim 17 claims the radio receiver of claim 9, further comprising a stereo decoder coupled to receive the impulse noise distortion indication signal, wherein the stereo decoder is responsive to the impulse noise distortion indication signal to modify the audio output signals to diminish impulse noise distortion effects in the decoded audio output signals. Eory's phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence

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themselves as brief period of unstable amplitude and frequency. Eory's discriminator outputs an error signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory receiver by coupling a decoder to the discriminator as claimed for the benefit of avoiding undesirable sounds at the speaker output.

Claim 19 claims the radio receiver of claim 9, wherein the distortion discrimination circuitry comprises multi-path distortion discrimination circuitry and the distortion indication signals comprises a multi-path distortion indication signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory's receiver by incorporating Kennedy's multi-path detector as claimed for the benefit of avoiding undesirable sounds at the speaker output.

Claim 23 claims the radio receiver of claim 4, further comprising a stereo decoder coupled to receive the multi-path distortion indication signal, wherein the stereo decoder is responsive to the multi-path distortion indication signal to modify the audio output signals to diminish multi-path distortion effects in the decoded audio output signals. Kennedy further teaches of a stereo decoder (22) connected to the multi-path detector/minimizer (30) and that the detector (30) controls the stereo decoder with a Multi-path Detect Signal from the minimizer

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(column 3, lines 62-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Kennedy's decoder for the benefit of having an even clearer sound at the speaker output.

11. **Claims 31,32 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eory (U.S. Patent 5,832,043) in view of Kennedy et al. (U.S. Patent 5,408,685).

Claim 31 claims the method of claim 25, further comprising modifying the audio output signals in response to the impulse noise distortion indication signal to diminish impulse noise distortion effects in the audio output signals. Eory's phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory's discriminator outputs an error signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). The method is obvious in the functionality of the device. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory receiver by coupling a decoder to the discriminator as shown by Kennedy for the benefit of avoiding undesirable sounds at the speaker output.

Claim 32 claims the method of claim 25, wherein the discrimination distortion step comprises discriminating multi-path distortion events and wherein the generating step comprises generating a multi-path distortion indication signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further

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teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). Modifying Eory's receiver by incorporating Kennedy Multi-path detector reads on the claimed matter. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory's receiver by incorporating Kennedy's multi-path detector as claimed for the benefit of avoiding undesirable sounds or noise at the output.

Claim 35 claims the method of claim 32, further comprising modifying the audio output signals in response to the impulse noise distortion indication signal to diminish impulse noise distortion effects in the audio output signals. Eory's phase/frequency discriminator is an impulse noise distortion detector. The applicant has stated in the background, page 2, line 14 that impulse noise distortions are distortion events that evidence themselves as brief period of unstable amplitude and frequency. Eory's discriminator outputs an error signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65). The method is obvious in the functionality of the device. The method is obvious in the functionality of the device. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory receiver by coupling a decoder to the discriminator as claimed for the benefit of avoiding undesirable sounds at the speaker output.

12. **Claim 42** is rejected under 35 U.S.C. 103(a) as being unpatentable over Eory (U.S. Patent 5,832,043) in view of Kennedy et al. (U.S. Patent 5,408,685).

Claim 42 claims the distortion discrimination circuitry of claim 36, wherein the distortion discrimination circuitry comprises multi-path distortion discriminating circuitry and

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the distortion indication signal comprises a multi-path distortion indication signal. Kennedy discloses a receiver comprising a stereo decoder (22) connected to a multi-path detector/minimizer (30) (Figure 1). He further teaches that the minimizer controls the stereo decoder with a Multi-path Detect Signal from the minimizer (column 3, lines 62-65).

Modifying Eory's receiver by incorporating Kennedy Multi-path detector reads on the claimed matter. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Eory's receiver by incorporating Kennedy's multi-path detector as claimed for the benefit of avoiding undesirable sounds or noise at the output.

Claim Objections

13. **Claims 20, 23 and 24** are objected to because of the following informalities:

Claim 20 at line 12 has the phrase "determine the existence of an impulse noise event" but what is claimed is the multi-path discrimination circuitry. It is unclear as to if the phrase should read "determine the existence of a multi-path noise event".

Claim 23 claims the automobile receiver of claim 19. Claim 19 does not claim an automobile receiver. Appropriate correction is required.

Claim 24 claims the radio receiver of claim 23, but claim 23 claims the automobile receiver of claim 19.

14. **Claim 25** is objected to because of the following informalities: The phrase at line 20, "indication signal a distortion event has been detected" is not clear. Examiner suggest indication signal as an indication that a distortion event has been detected". Appropriate correction is required.

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15. **Claims 11-16, 18, 20-22, 27-30, 33-34,38-41,43-44** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 703-305-4359. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

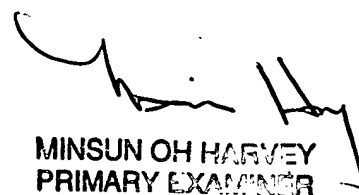
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MINSUN OH HARVEY
PRIMARY EXAMINER